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ENTOMOLOGICAL NEWS

VOL. LII JULY 1941 No 7.

The Hibernation in Missouri of Zerene caesonia (Stoll) and Euptoieta claudia (Cram.) (Lepid.: Pieridae and Nymphalidae).

By HAROLD I. O'BYRNE, 663 W. Lockwood Ave., Webster Groves, Missouri.

Our knowledge of the winter status of many of our familiar butterflies is far from complete. This is especially true of a number of species of southern distribution which are known to remain on the wing during the winter months in the South, but whose winter habits in the northern parts of their ranges are shrouded in mystery. Missouri is a border state with respect to these species, and for that reason, data on their hibernation in Missouri should have special significance. The Missouri species that deserve study in this connection are *Phoebis sennae eubule* (Linn.), *Zerene caesonia* (Stoll), *Eurema nicippe* (Cram.), *E. lisa* (Bdv. & Lec.), *Danaus plexippus* (Linn.), *Euptoieta claudia* (Cram.), *Precis coenia* (Hbn.), and *Anaea andria* Scud. Of these, only *Anaea andria* has heretofore been definitely known to hibernate in the imagine stage. The following records refer to *Zerene caesonia* and *Euptoieta claudia*.

Autumn individuals of *Zerene caesonia* are of the form *rosa* McNeill, characterized by the more or less extensive pink suffusion on the lower surface of the wings, especially in the females. In contrast, butterflies of the summer brood are plain yellow below, with no suggestion of pink. Butterflies captured in the spring, therefore, show by this character whether they belong to the brood that ordinarily emerges in the fall or the one that emerges in early summer. The forms and dates of the specimens in my collection are:

Form *rosa*: Mar. 6*; Apr. (no date)*; May 1.

Form *caesonia*: May 22, 25; June 11, 12, 16.

Form *rosa*: Sept. 11*, 15, 22; Oct. 23.

Specimens starred (*) represent the form of *rosa* known as *rosea* Roeber and belong to the autumn brood.

The earliest three spring specimens show the coloration of the brood which emerges in the fall; however, this is only circumstantial evidence that they actually emerged in the autumn preceding their capture. But the one caught on March 6 (1932) was found actually hibernating, under a small log on the east slope of a narrow valley. The butterfly was lying on its side, dormant, and was clinging with its legs to debris on the ground. This observation was made shortly before 11 a. m., when the temperature was 27° F., at Ranken (4 miles east of Eureka, St. Louis County), Missouri.

Less conclusive is the evidence for hibernation in *Euptoieta claudia*. This species is supposedly triple-brooded, but I find no break in its flying period during the summer, though the autumn brood is well set off. I have specimens taken on the following dates:

Summer brood: June 23.

Autumn brood: Sept. 21; Oct. 26; Nov. 1, 9.

Representative additional dates of its occurrence, taken from my records, are:

Summer broods: May 25; June 3, 14, 27; July 5, 12, 26; Aug. 10.

Autumn brood: Sept. 20, 22; Oct. 2, 11, 29.

Possible hibernators: May 13.

At Ranken, May 13, 1932, I saw a badly worn and faded female, and later on the same day a male just as worn, flying about on a sheltered, sunny hillside. The early date (for this species) and the evident worn condition of the butterflies, suggested strongly that they had hibernated. In view of the complete absence of records of possible hibernators in other years, it may be that 1932 was an exceptionally favorable year and that hibernation in Missouri takes place only under such favorable conditions. Scudder (Everyday Butterflies, 1899, p. 358) says, "It seems probable that the butterfly often hibernates, and that some of the autumn chrysalids do not disclose their inmates until very early the following spring"; but

Scudder worked in a locality considerably farther north than Missouri. My experience has been that all that have pupated emerge in the fall, but there are insufficient data to indicate whether the usual overwintering stage is the larva or the adult. French (Butterflies of the Eastern U. S., 4th ed., 1914, p. 167) says that the last brood probably hibernates in the larval state. A need for further observation is apparent.

On Lerodea telata Herrich-Schaeffer and tyrtaeus Ploetz (Lepidoptera: Hesperiidae).

By E. L. Bell, Flushing, New York.

There seems to have been more or less confusion in the application of the names *telata* and *tyrtaeus,* the latter usually having been considered as a form of or a synonym of the former. An examination of the male genitalia shows that the insects to which these names should be applied are really specifically distinct.

Lerodea telata Herrich-Schaeffer (Fig. 1).

1869. *Cobalus telata* Herrich-Schaeffer, Correspondenzblatt des Zoologisch-Mineralogischen Vereines zu Regensburg, xxiii, p. 201.

1883. *Hesperia telata* Ploetz, Stettiner Entomologische Zeitung, xliv, p. 51; *apellus* Kaden, i. l. Laguayra.

Herrich-Schaeffer did not mention the locality whence came his type material. The original description distinctly says that the spots of the forewings are yellow and Ploetz also says that they are of that color. Specimens before the writer from localities in Venezuela, Trinidad, British West Indies and Brasil have yellow spots on the primaries and these are considered to be the true *telata of* Herrich-Schaeffer.

Examination of the male genitalia of four specimens from the countries above mentioned shows the same form in all of them. In the figure here given of a specimen from Venezuela it will be seen that the claspers terminate in a short triangular apex, immediately back of which rises a stout dorsal tooth extending obliquely backward.

Male genitalia of 1. *Lerodea telata* Herrich-Schaffer, 2. *L. tyrtaeus* Ploetz.

LERODEA TYRTAEUS Ploetz (Fig. 2).

1883. *Hesperia tyrtaeus* Ploetz, Stettiner Entomologische Zeitung, xliv, p. 51. Laguayra.

1900. *Megistias telata* Godman, (not Herrich-Schaeffer), Biologia Centrali-Americana, Rhopalocera, ii, p. 574; pl. 101, figs. 13, 14, 15 male genitalia. Mexico; Honduras; Venezuela; Guiana.

1907. *Hesperia tyrtaeus* Godman, Annals and Magazine of Natural History, (7) xx, p. 143, "*Megistias telata* H.-S.-var."

1909. *Callimormus elides* Weeks, Entomological News, xx, p. 263, Suapure, Venezuela.

1911. *Callimormus elides* Weeks, Illustrations of Diurnal Lepidoptera, ii, p. 29; pl. xxi, fig. 1.

1924. *Megistias telata* Draudt, (not Herrich-Schaeffer), in Seitz Macrolepidoptera of the World, v, p. 974; pl. 187i.

In his paper on the genus *Hesperia* Ploetz describes *tyrtaeus* immediately following his diagnosis of *telata* Herrich-Schaeffer, and states that the spots on the primaries of *tyrtaeus* are white, thus distinguishing that insect from *telata* with yellow spots. Godman (1900) states that the insect he determined as *telata* had white spots, which he shows in his figure. He also figures the male genitalia of a Mexican specimen, this figure differing in the termination of the claspers from the form found in *telata*.

A female specimen from Ruatan Island, Honduras, in the collection of the American Museum of Natural History and a series of male specimens in the collection of the National Museum from Mexico; Guatemala; Costa Rica and Taboga Island, Panama, have small, dirty white spots on the primaries and these are believed to be *tyrtaeus*.

These specimens superficially agree with the Godman figures and the form of the genitalia from four specimens, kindly dis-

sected by Mr. W. D. Field, agrees in detail with the Godman figure.

In the accompanying figure of the genitalia of *tyrtaeus* it will be seen that the claspers terminate in a long, narrow, sharply pointed apex, far back of which rises a short triangular tooth.

Tyrtaeus usually has the spots of the discal band of the primaries much smaller than those found in *telata* and often some of them are very indistinct or entirely lacking, but other than this and the whitish color of the spots there is considerable resemblance between the two species, especially on the under side of the secondaries where the color and pattern is very much the same, although variable in both species.

The Ploetz type of *tyrtaeus* was said to have come from Laguayra and in this region may possibly fly with *telata* but in Mexico and the Central American region it appears to be the prevailing species.

The Genus Colias in North America (Lepidoptera: Pieridae).

By Austin H. Clark, U. S. National Museum, Washington, D. C.

In the study of butterflies too much attention has been concentrated on the description and study of type or typical specimens and too little on the description of species as a whole. Yet it is quite as important to understand a species as a unit as it is to view it as an aggregation of subspecies, forms, and aberrations.

The following description of the common local *Colias* is based upon a very large number of specimens, all from the District of Columbia. They were collected by Mr. Warren Herbert Wagner, Jr., who has been so kind as to permit me to study them in detail. He later presented them to the U. S. National Museum.

Regarding this description the objection may be raised that the specimens represent the local *philodice,* the recent immigrant *eurytheme,* and hybrids between them. But since *philodice* is only the northeastern form of *eurytheme* and hybridization occurs at all points where the ranges of these two forms overlap the picture presented by these specimens is a perfectly natural one so far as this species is concerned.

The fore wings in the males vary from 18 to 32 mm. in length, and in the females from 18 to 33 mm. Dwarfs are most common in early spring, though they occur at all seasons. Giants are found only in the last half of the summer, in low and more or less damp meadows.

The shape of the fore wings is very varied. They may be short and broad with the outer edge at right angles to the lower edge and the outer edge rather strongly convex, or longer with the angle between the outer and lower borders obtuse, the outer border straight, and the apex pointed. In early spring or winter individuals they may be markedly elongated and narrow. The extreme type of short wing and the extreme type of long wing occur most frequently in very small individuals and are rare in individuals above medium size. The pointed wing with the straight outer border is characteristic of all very large individuals, but occurs typically developed also among the smallest. The lower border of the fore wings is straight in the females, in the males either straight or bowed outward forming a very broadly rounded obtuse angle approximately in the center. There is no difference in wing shape between yellow and orange individuals, but the majority of the yellow individuals have the outer border of the fore wings more or less convex and the lower border straight, while most of the orange ones, particularly the larger, have the outer border straight and the lower bowed outward. However, many yellow individuals, especially the larger ones, have the same wing shape as orange individuals of the same size. There is little difference between males and females in the shape of the fore wings, though in the females they are never so pointed as in the more extreme males, and the lower border is always straight.

The hind wings vary from evenly rounded with scarcely any trace of an anal angle to subangulate with a sharply rounded anal angle, almost a right angle, and another sharply rounded angle at the end of vein 6. They are usually broad, the maximum width in the females and in many males being 88 percent of the length. In the larger males with strongly angulated

wings the width is 80 percent of the length. In long-winged early spring or winter individuals the maximum width is only 70 percent of the length.

The color varies from a light clear citron yellow, sometimes more or less greenish, to a uniform brilliant orange, the males with more or less intense violet reflections, usually with the costal margin yellow, and in the females with the spots included in the dark borders yellow. But the costal margin in both sexes and the included spots in the dark borders of the females are occasionally orange like the rest of the wing. Rarely the males are chrome yellow or uniform light dull orange.

In the transition from the yellow to the deep orange forms the orange first appears as a faint flush on the under side of the fore wings in the inner portion. The next stage is an orange flush between the lower edge and vein 1 of the fore wing. From this the orange flush spreads upward to the cell. Individuals are common that have the fore wings suffused with orange in a roughly triangular patch extending from the wing base outward to a line from the end of the cell to the lower end of the dark margin, the upper and outer sides of this orange triangle gradually shading into the yellow of the rest of the wing. More rarely this orange patch has sharply defined borders, or the veins anterior to the orange patch are broadly bordered with orange, the borders being broadest at the base and tapering outwardly. Next the orange suffusion appears on the hind wings, but here it becomes evident uniformly over the entire wing except anterior to vein 7 and below vein 1, these areas always remaining yellow. As the orange spreads over the wings it usually deepens in color, though this is not always true. Uniform pale orange, chrome yellow, or dull orange individuals occur, flying with the much more numerous bright orange and clear yellow ones.

(To be continued.)

OBITUARY

Science for June 13, 1941, announced the death of Dr. Lee Abram Strong, chief of the Bureau of Entomology and Plant Quarantine, on June 2. He was born at Russell, Iowa, June 17, 1886, was engaged in horticultural inspection and plant quarantine in California 1910-18, 1919-29, and in the Federal service from 1929 on, becoming chief of the Bureau above mentioned in July, 1934.

The Leng Types of Cicindelidae (Coleoptera).

By RICHARD G. DAHL, Oakland, California.

(Continued from page 172.)

10. C. BELLISSIMA Leng.. Leng, C. W., 1902, Cic. of Bor. Amer.; Trans. Amer. Ent. Soc. XXVIII, p. 142.

Lectotype Locality: Yaquina Bay, Oregon. *Collector:* Wickham.

Discussion: Lectotype male designated from a series of ten specimens all from Oregon (C. W. Leng collection). In the designated lectotype the color is coppery green above and dark green below; the impressions of the thorax and elytra are metallic green; the markings are uniformly widened. In the cotype series there is little variation, except in color, which varies from cupreous to greenish-bronze.

11. C. LONGILABRIS var. NOVATERRAE Leng. Leng, C. W., 1918, Journ. N. Y. Ent. Soc. Vol. XXVI, Nos. 3-4, p. 140.

Type Locality: Bay St. George, Newfoundland. *Date:* July. *Collector:* W. S. Genung.

Discussion: Type designated by C. W. Leng in 1918 from four specimens, represented by a type (female) and three paratypes. In the type the markings are narrow, and the subapical spot does not extend to the margin. The color is brilliant green with bronze reflections. This form is a synonym of *Cicindela longilabris* subsp. *laurenti* Schp.

12. C. LONGILABRIS var. VESTALIA Leng. Leng, C. W., 1902, Cic. of Bor. Amer.; Trans. Amer. Ent. Soc. XXVIII, p. 121.

Lectotype Locality: Maiden, Montana. *Date:* June 17, 1890. *Collector:* From the collection of Fred C. Bowditch.

Discussion: Lectotype female designated from a cotype series of three. Additional cotype specimens are from Fort McLeod, British America, 1882, and Telegraph Creek, British America, all from the C. W. Leng collection. In the designated lectotype, the color is bright coppery bronze above and dark metallic green below. In the cotype series there is little variation except in color, which varies from coppery-bronze to dark

green. This form is a synonym of *Cicindela longilabris* Say.

13. C. LONGILABRIS var. OSLARI Leng. Leng, C. W., 1902, Cic. of Bor. Amer.; Trans. Amer. Ent. Soc. XXVIII, p. 121.

Lectotype Locality: Southwest slope of Mount Wilson, 12,000 feet, San Miguel Range, Colorado. *Date*: July 18 to 27. *Collector:* Ernest J. Oslar.

Discussion: Lectotype female designated from a cotype series of nine. Additional cotype specimens are from Colorado and Savoy, South Dakota, 5,000 feet, June 11, all from the C. W. Leng collection. In the designated lectotype the color is brilliant green throughout, with no humeral marking, but with a post-humeral spot, otherwise narrow markings. In the cotype series before me, six have humeral spots, one is without post-humeral spots; otherwise the markings vary only in their widths, and in that very little. The color in the cotype series varies from coppery-bronze to bright green. This form is a synonym of *Cicindela longilabris laurenti* Schp.

14. C. OREGONA var. MARICOPA Leng. Leng, C. W., 1902, Cic. of Bor. Amer.; Trans. Amer. Ent. Soc. XXVIII, p. 150.

Lectotype Locality: Phoenix, Arizona.

Discussion: Lectotype male designated from a cotype series of six. Additional cotype specimens are labeled "Prescott, Arizona, May 13", and "Arizona", all from the C. W. Leng collection. In the designated lectotype the head and the pronotum are a shining metallic green; the elytra are a dull dark violet, and the underparts are a shining dark violet. In the cotype series there is little variation, except in size, which varies the same as in *oregona Lec.* The markings are generally heavier than *oregona* Lec.

There is sufficient evidence to prove that this form should be known as *Cicindela oregona* subspecies *maricopa*. It is restricted to the southern arid regions of the Great Basin. In the M. A. Cazier collection there is a specimen from Zion Cañon, Utah, of which the elytra are a dull dark green and the pronotum a dull green. A specimen from Barstow, Cali-

fornia, July, 1914, (R. T. Garnett collection) is typical of *maricopa*. In a series of *maricopa* from Prescott, Arizona, June, 1909 (H. Kushner), three stand out as different, varying in being entirely black above, and the thorax beneath dark violet and the abdomen dark green. Another specimen from White Mountains, Arizona, June, (D. K. Duncan collector) has heavy markings, a dark green elytra and a cupreous pronotum. It is intermediate between *maricopa* and *guttifera* Lec.

15. C. SEXGUTTATA var. HARRISI Leng. Leng, C. W., 1902, Cic. of Bor. Amer.; Trans. Amer. Ent. Soc. XXVIII, p. 128.

Lectotype Locality: Lake Memphremagog, Canada.

Discussion: Lectotype male designated from a series of four cotypes. Other cotype specimens are from De Bruce, New York; Stamford, New York, August and North Carolina, all from the C. W. Leng collection. This variety can be distinguished from typical *sexguttata* Fab., by the absence of the strong bluish or greenish reflections. It is a mountain form, being taken at high elevations throughout north-eastern United States.

16. C. ROBUSTA Leng. Leng, C. W., 1902, Cic. of Bor. Amer.; Trans. Amer. Ent. Soc. XXVIII, p. 124.

Lectotype Locality: Alpine, Texas. *Date:* July 20-22. *Elevation:* 4,400-6,000 feet. *Collector:* Wickham.

Discussion: Lectotype female designated from two cotype specimens, both from the C. W. Leng collection. The other cotype is from Marfa, Texas, June 15. In the designated lectotype the anterior parts of the elytra are more coarsely punctate than in that of *nigrocoerulea* Lec., and is a dark green in color. Neither of the cotypes have markings, as illustrated by W. Horn[1].

17. C. BOWDITCHI Leng. Leng, C. W., 1902, Cic. of Bor. Amer. Trans. Amer. Ent. Soc. XXVIII, p. 124.

Lectotype Locality: Vicinity of Durango, La Plata County, Colorado. *Date:* July 23-August 8, 1885. *Collector:* Fred

[1] Horn, Walther, 2,000 Zeichnungen von Cicindelinae, Band 5, März 28, 1938, p. 76.

C. Bowditch. *Lectotype Now Located:* Museum of Comparative Zoology, Harvard College, Cambridge, Massachusetts.

Discussion: Two specimens were mentioned by Leng[2], both as occurring in the vicinity of Durango, Colorado.

Mr. M. A. Cazier, who has seen this specimen at Cambridge, has assured me that it agrees in every way with the description. This designated lectotype is entered as a cotype in the Museum of Comparative Zoology type catalog under number 16,272. This form is at present considered to be the maculated variety of *nigrocoerulea* Lec.

18. C. CARTHAGENA HENTZIANA Leng. Leng, C. W., 1918, Journ. N. Y. Ent. Soc., Vol. XXVI, Nos. 3-4, p. 139.

Discussion: This name was proposed by C. W. Leng in place of *Cicindela carthagena hentzi* Geo. H. Horn which was previously occupied by *Cicindela carthagena hentzi* Dej. The type of this is in the George H. Horn collection at the Philadelphia Academy of Natural Sciences.

19. C. PUSILLA var. TUOLUMNAE Leng. Leng, C. W., 1902, Cic. of Bor. Amer.; Trans. Amer. Ent. Soc., XXVIII, p. 157.

Lectotype Locality: Hetch Hetchy Valley, Tuolumne County, California. *Collector:* Dr. Edwin C. Van Dyke.

Discussion: Lectotype female designated from the unique specimen in the C. W. Leng collection. This is at present considered to be an aberrant form of *Cicindela pusilla lunalonga* Schp.

20. C. KNAUSII Leng. Leng, C. W., Cic. of Bor. Amer.; Trans. Amer. Ent. Soc., XXVIII, p. 166.

Discussion: There are no specimens of this in the C. W. Leng collection that agree with his descriptions well enough to be designated as a lectotype. This is at present recognized as a variety of *nevadica* Lec.

I have been unable to locate either types or cotype material of *Omus intermedius* Leng, *Cicindela tranquebarica minor* Leng, and *Cicindela knausii* Leng. There is no material in the C. W. Leng collection that agrees with his descriptions of these. It is unfortunate that this type material became separated from the C. W. Leng collection of Cicindelidae.

[2] Leng, C. W., 1902, Cic. of Bor. Amer; Trans. Amer. Ent. Soc. XXVIII, p. 124.

Undescribed Species of Crane-flies from the Eastern United States and Canada (Dipt.: Tipulidae). Part VII.

By CHARLES P. ALEXANDER, Massachusetts State College, Amherst, Massachusetts.

The Tipulidae discussed herewith have been received from various sources that are indicated in connection with each species. The preceding part under this general title was published in ENTOMOLOGICAL NEWS, vol. 51: 83-85, 99-103; 1940.

Dolichopeza (Oropeza) pratti n. sp.

Belongs to the *obscura* group; general coloration of mesonotum opaque brown, without clearly defined stripes; legs dark; wings with a brownish tinge, the oval stigma a little darker brown; vein Sc_1 preserved; abdominal segments bicolored; male hypopygium with median area of tergite narrowly produced into a tridentate lobe; lateral tergal arms appearing as narrow spatulate blades; outer dististyle a little dilated on basal portion, the apex a short spinous point; inner dististyle deep, its rostral prolongation long; aedeagus simple, unarmed.

♂. Length about 8-9 mm.; wing 10-10.5 mm.; antenna about 2.8 mm.

Frontal prolongation of head brownish black; palpi dark brown. Antennae with scape brownish yellow; pedicel light yellow; flagellum black; verticils of flagellar segments coarse. Head dark gray.

Mesonotum brown, the surface of praescutum opaque, the posterior sclerites more nitidous; in some cases, praescutum with faint indications of lighter stripes. Pleura paler brown. Halteres dusky.

Legs with the coxae pale brown; trochanters obscure yellow; remainder of legs brown, including the tarsi.

Wings with a brownish tinge, the oval stigma a little darker brown; prearcular field a very little brightened; veins brown. Venation: Sc_1 preserved, Sc_2 ending opposite or just beyond the origin of *Rs;* petiole of cell M_1 exceeding *m*.

Abdominal tergites obscure brownish yellow to testaceous yellow, the lateral margins and incisures darkened, on the outer segments and hypopygium the dark color including all of the segments; basal sternites yellow, the incisures narrowly darkened, the outer segments more generally suffused. Male hypopygium with the median area of tergite produced into a

narrow lobe, the apex of which is further toothed, usually tridentate, with the central point longest; lateral tergal arms with outer blades expanded into weak spatulae, in some cases these only a little wider than the arms. Outer dististyle a little dilated on basal portion, the apex a short spinous point. Inner dististyle with the blade deep, the rostrum long-produced, its apex weakly bidentate. Aedeagus simple, unarmed.

Habitat.—MINNESOTA. *Holotype*: ♂, St. Paul, September 14, 1940 (H. D. Pratt). *Paratopotypes*, 5 ♂ ♂. Types in author's collection.

I take great pleasure in naming this interesting crane-fly in honor of the collector, my former student, Dr. Harry Davis Pratt. From the other described species of the *obscura* group, the present fly is closest to *obscura* (Johnson), *tridenticulata* Alexander, and *polita* (Johnson), especially the last. The shape of the median tergal lobe is much the same in the two flies but the other details of structure of the hypopygium of *polita* are quite distinct, especially the more expanded lateral tergal arms, the bulbous basal enlargement of the long blackened outer dististyle, the tuft of longer setae on outer face of the inner dististyle, and the differently constructed gonapophyses with more abundant armature. All of these species differ further in the length and structure of the antennae.

Limonia (Dicranomyia) broweriana n. sp.

Allied to *magnicauda;* general coloration of thorax brownish yellow, the praescutum with a very conspicuous blackened median stripe; antennae black throughout; wings with a faint yellow tinge, the stigma only slightly indicated; male hypopygium very large and complicated in structure; ninth tergite subcordate in outline, the caudal margin truncate; both the basistyle and ventral dististyle greatly complicated by lobes and outgrowths.

♂. Length about 8 mm.; wing 7.4 mm: ♀. Length about 8 mm.; wing 7.5 mm.

Rostrum brownish black; palpi black. Antennae black throughout; flagellar segments oval, the outer segments a little more elongate; terminal segment (male) a trifle longer than the penultimate; verticils short. Head dark brown.

Pronotum brownish black medially, paler on sides. Mesonotal praescutum brownish yellow pollinose, with a very con-

spicuous blackened median stripe and inconspicuous brownish lateral areas, all of these in some cases more or less confluent on the posterior portion of sclerite; posterior sclerites of notum chiefly pale, the scutellum and median area of scutum faintly pruinose; scutal lobes weakly darkened. Pleura brownish yellow pollinose, the ventral sternopleurite a trifle darkened. Halteres relatively short, stem yellow, knob dark brown.

Legs with the coxae and trochanters yellow; remainder of legs dark brown, the femoral bases yellow.

Wings with a faint yellow tinge, the stigma only slightly differentiated; prearcular field clearer yellow; veins brown, flavous in the basal area. Venation: *Sc* variable in length, Sc_1 ending shortly before to just beyond the origin of *Rs*, Sc_2 slightly removed from its tip, Sc_1 alone subequal to *m-cu;* vein *2nd A* gently sinuous.

Abdominal tergites dark brown, the extreme caudal margins pale; sternites obscure brownish yellow to pale brown, with the pale caudal borders somewhat wider and more conspicuous. Male hypopygium very large and conspicuous, the most so of any of the described Nearctic species of the subgenus. Ninth tergite very large, subcordate in outline, narrowed behind, the length and greatest width subequal; caudal margin of tergite truncate, with numerous setae. Basistyle of moderate size, the ventromesal lobe large and very complicated by lobules and outgrowths, including one arm that is conspicuously but unequally bifid, the lower branch being only about one-half as long as the more clavate upper branch; besides this arm, the lobe is produced into an even larger and longer blade that gradually narrows to the pale obtuse apex. Dorsal dististyle a small, sickle-shaped rod. Ventral dististyle with the main body small and pale, the base and rostral prolongation more sclerotized and very complex; from base of style extends a long, gently curved blackened arm, the tip expanded and further produced at apex into a small digitiform lobule; rostral prolongation very complex, beyond the two subequal spines widened and bilobed, the upper lobe longer and terminating in a recurved spinous point; lower lobe broader and more obtuse. Gonapophyses with mesal-apical lobe small but slender, gently curved.

Habitat.—MAINE. *Holotype*: ♂, Richardson Lake, near Oquassoc, Oxford County, August 24, 1940 (A. E. Brower). *Allotopotype*: ♀.

This striking crane-fly is named in honor of Dr. A. E.

Brower, to whom I am very greatly indebted for many interesting Tipulidae from Maine and from interior Gaspé. The nearest ally is *Limonia* (*Dicranomyia*) *magnicauda* (Lundström) of northern Europe. While both species agree in the great size of the male hypopygium and in the general structures of the same, yet all details of the tergite and the various lobes of the basistyle and ventral dististyle are distinct in the two flies.

Dicranoptycha tennessa n. sp.

General coloration brownish gray, the praescutum with a slightly darker median stripe; antennae with scape brownish black; pleura light gray, the anepisternum and ventral sternopleurite darkened; legs obscure yellow, the femora with the tips rather narrowly infuscated; wings with costal fringe (male) unusually long and conspicuous; abdominal tergites brown, sternites yellow, a black subterminal ring; hypopygium yellow; male hypopygium with the outer dististyle unusually broad and flattened, terminating in a short blackened point; surface of style before apex weakly roughened; aedeagus unusually broad and flattened.

♂. Length about 9 mm.; wing 8.5 mm. ♀. Length about 10 mm.; wing 9.5 mm.

Rostrum black, sparsely pruinose; palpi black. Antennae with scape brownish black, pedicel brownish yellow, flagellum brownish black. Head gray, provided with long conspicuous black setae.

Pronotum brownish gray. Mesonotal praescutum brownish gray, with a more or less distinct, darker brown, median stripe, the lateral stripes less evident; posterior sclerites of notum grayish pruinose. Pleura light gray, more darkened on the anepisternum and ventral sternopleurite. Halteres relatively elongate, yellow.

Legs with the coxae testaceous yellow; trochanters yellow; femora obscure yellow, the tips rather narrowly but evidently infuscated, the amount subequal on all legs; tibiae and basitarsi obscure yellow; outer tarsal segments blackened.

Wings with a yellowish tinge; veins brown. Costal fringe of male unusually long and conspicuous. Venation: *Rs* relatively short, only about one-fifth longer than the basal section of R_{4+5} and much shorter than cell *1st* M_2, the latter relatively small; *m-cu* nearly its own length beyond the fork of *M*.

Abdominal tergites brown; sternites yellow, the subterminal

spicuous blackened median stripe and inconspicuous brownish lateral areas, all of these in some cases more or less confluent on the posterior portion of sclerite; posterior sclerites of notum chiefly pale, the scutellum and median area of scutum faintly pruinose; scutal lobes weakly darkened. Pleura brownish yellow pollinose, the ventral sternopleurite a trifle darkened. Halteres relatively short, stem yellow, knob dark brown.

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Abdominal tergites brown; sternites yellow, the subterminal

segments black; hypopygium yellow. Male hypopygium with the tergal arms relatively short, expanded into broad blades, their apices obtuse. Outer dististyle unusually broad and flattened, terminating in a short blackened point; surface of style before apex weakly roughened; base of style with abundant short pale setulae. Inner dististyle relatively short, not or scarcely constricted before apex. Aedeagus unusually broad and flattened, more so than in *megaphallus* or *sobrina*.

Habitat.—TENNESSEE. *Holotype*: ♂, Knoxville, June 10, 1939 (Arthur C. Cole). *Allotopotype*, ♀, pinned with type.

This interesting fly was included in extensive series of Tipulidae from the Great Smoky Mountains, received from my friend, Dr. Arthur C. Cole, to whom I am greatly indebted for many favors. The species is allied to *Dicranoptycha sobrina* Osten Sacken and probably has been confused with this in collections. Both species have the costal fringe of the male long and very conspicuous. The present fly has the darkened apices of all femora subequal in amount and has a very different male hypopygium, with both the outer dististyle and aedeagus unusually broad and flattened.

District of Columbia Butterfly Notes (Lepidoptera : Rhopalocera).

By WARREN HERBERT WAGNER, JR., Washington, D. C.

In "The Butterflies of the District of Columbia and Vicinity" (U. S. Nat. Mus. Bulletin 157), Mr. Austin H. Clark listed 92 species and subspecies from the area covered. Forty-five additional species were listed in an appendix as possibly occurring as very local residents or casuals.

Since the publication of this list 10 species have been added to the District fauna. Of these, 7 were given in the appendix, 2 were not mentioned in the appendix, and one (*Thorybes confusis*) had been earlier recorded from the District by Mr. E. L. Bell but the record had been overlooked by Mr. Clark. These ten species are: *Lycaena thoë* (Guerin), *Strymon liparops strigosa* Harris, *Eurema jucunda* Boisduval and LeConte,

Papilio palamedes Drury, *Erynnis zarucco* Lucas, *Thorybes confusis* Bell, *Hesperia metea* (Scudder), *Atrytone bimacula* Grote and Robinson, *Poanes aaroni* Skinner, *Lerodea eufala* (Edwards).

Of these 10 species Mr. Clark secured *Atrytone bimacula; Poanes aaroni* was recorded from a specimen taken many years ago by Mr. Eugene M. Aaron; *Thorybes confusis* was earlier recorded by Mr. Bell and has been taken both by Mr. Clark and myself; and I had the good fortune to secure the other seven.

In addition to these Mr. Clark has taken *Papilio philenor* f. *acauda* in nearby Maryland and *Lycaena phlaeas hypophlaeas* ab. *fulliolus* in nearby Virginia: Mr. Gilbert Yobst has taken *Vanessa virginiensis* ab. *ahwashtee* in the latter place and I have taken several specimens of *Phyciodes tharos* ab. *dyari* in Washington.

These additions to the District list, with the exception of the last two have been briefly noted by Mr. Clark. I have, however, some supplementary notes on these and other species in the District of Columbia area which seem to be worthy of publication. For helping me I should like to acknowledge the Washington naturalists for their assistance and Dr. R. G. Schmieder of the University of Pennsylvania for his suggestions. Most of all I am indebted to Mr. Clark for his patient assistance in every way and for contributing introductory material. The nomenclature used is that of McDunnough's 1938 Check List of the Lepidoptera of Canada and the United States with two exceptions.

SATYRODES EURYDICE (Johannsen). There is a partial second brood in the Washington area. Mr. Shoemaker found it here in September and I have seen it a few times at Hyattsville, Maryland, in late September and I have one taken September 19, 1936, along Difficult Run near Tyson's Corner, Fairfax County, Virginia.

MINOIS ALOPE (Fabricius). In Washington, those specimens without the lower eye-spot on the fore wings above, which are like the large southern subspecies *pegala,* are merely variants of f. *maritima.* However, those specimens that are found

along the Chesapeake Bay salt marshes in Maryland east of Washington are larger and much closer to typical *pegala*.

POLYGONIA INTERROGATIONIS (Fabricius). The winter form (*fabricii*) and the summer form (*umbrosa*) are occasionally found out of season. It is interesting to note that in 1935, Wayne K. Hill and I found a number of the summer form in early May and I took a badly worn one in Rock Creek Park, May 28. At the last place I took the winter form on July 21, 1935.

PRECIS COENIA (Hübner). The wet form appeared in 1933-34-35, late in the season in great numbers at MacMillan Park in Washington. The reddish underside varies from bluish to almost entirely dark brown in some individuals.

ASTEROCAMPA CLYTON (Boisduval and LeConte). Although they are sometimes found together, when alone *clyton* occurs in dry open places around hackberries and *celtis* flies usually in deep woods. In the Soldiers Home Grounds in Washington *clyton* occurs alone. The first brood lasts from the end of the second week in June until the first week in July. July 10, 1934, was an unusually late capture. The second brood starts the middle of August and flies until late September. Two chrysalids in my series are dated September 20, 1934. The color ranges from very light to very dark. On August 28, 1938, I watched an old male court a fresh female. It took him about thirty minutes to rout three other males. The female repulsed him by quick darts for fifteen minutes and then they suddenly mated. The female carries the male in flight. The ceremony took place around the bottom branches of a cherry tree about ten feet above the ground. *Clyton* is found also at Camp Letts, Fair Haven, and Fort Washington in Maryland.

PHYCIODES THAROS (Drury). Because of its great abundance aberrations are frequently found. Specimens with slightly fused markings are found in both broods and the markings come together in many different combinations. Melanism is frequent and the melanistic aberration *dyari* Gunder has been found several times in and near Washington. Males seem attracted to the females of this coloration as much as the females of normal markings.

ARGYNNIS APHRODITE Fabricius. Two males; a fresh one lacking the usual reddish tinge taken in Washington, June 8, 1938, and an old broken one from Beltsville, Maryland, on July 2, 1938; indicate that at least some males appear before the middle of June instead of the first of July.

VANESSA VIRGINIENSIS (Drury). A specimen of the aberration *ahwashtee* Fox was taken by Mr. Gilbert Yobst along Scotts Run, Fairfax County, Virginia, in May, 1936. The ground color of the hind wings underneath is snow white and all of the markings are slightly blurred.

LIBYTHEA BACHMANII Kirtland. The Snout Butterfly is more common in the region along Chesapeake Bay in Maryland to the east of Washington, but it varies tremendously in numbers. In 1932, it was exceedingly abundant at Camp Letts, near Beverley Beach, Maryland, but only of infrequent occurrence since. During 1933-34-35, chrysalid skins were found on hackberries in the Soldiers Home Grounds around the bottom branches near the trunks.

STRYMON FALACER (Godart). In certain very restricted localities this hairstreak is abundant for a limited period. Sunny glades in dry oak woods (often with much pine) form the playgrounds for the males. Beside chasing one another I have seen them pursue *Achalarus lyciades, Epargyreus tityrus* and *Thorybes* species. Males appear the first week in June and remain in their woods until after the middle of June when they start wandering out into the open fields. It was found at Widewater, Beltsville and Muikirk, in Maryland, and in the Soldiers Home, Catholic University Grounds and in woods east of 16th Street, N. W., near the District line. Some specimens found showed a decided breaking up of the band on the underside approaching *S. edwardsi.*

S. LIPAROPS STRIGOSA Harris. Only one has been found: this was a female taken June 10, 1935, on Aster flowers near the bog at Hyattsville, Maryland.

S. TITUS MOPSUS Hübner. This hairstreak is also more common than previously supposed. The Catholic University Grounds and the bog at Hyattsville, Maryland, are the locali-

ties where it is most common. The males select brushy knolls of dry grassy hills for their playgrounds and they are very pugnacious. Orange and Red Milkweeds are its favorite flowers. My earliest date is June 13, 1936, at Camp Letts, Maryland and it becomes rare after the middle of July. It is never found in the woods but rather in open country. Dwarfs are occasional in both sexes.

INCISALIA HENRICI (Grote and Robinson). This is one of our earliest appearing butterflies. I have a male taken March 30, 1935, at Cabin John, Maryland. It also occurs at Hyattsville, and near the Powdermill Bogs along Paint Branch, in Maryland and in woods west of 16th Street, N. W., near the District line.

FENISECA TARQUINIUS (Fabricius). On June 11, 1939, this butterfly was common on elms along Morningside Drive, N. W., in Washington. The elms were infested with aphids and I suspect that these were the food. Its usual haunt is along streams.

LYCAENA THOË (Guerin). In 1934, I took an old female in a dry field in the Soldiers Home Grounds on June 15 and a perfectly fresh male in the Beltsville, Maryland Bog on July 22. This extends the known range on the Eastern Seaboard considerably southward.

PHOEBIS SENNAE EUBELE (Linnaeus). Spring records are a female taken by Mr. Wayne K. Hill, May 11, 1935, at Cabin John, Maryland, and a male that I took in April, 1933, at Terra Cotta in the District. Both are somewhat old specimens. A female taken in August, 1939, at Camp Letts, Maryland, (where *eubele* is much more common) is very pale yellow showing an approach to f. *pallida*.

EUREMA NICIPPE (Cramer). A male taken March 21, 1938, in downtown Washington and a female taken April 27, 1935, at Cabin John, Maryland, are the only spring records for this area.

(To be continued.)

Notes on Some Cuculliinae (Phalaenidae, Lepidoptera) I.

By J. G. Franclemont, Ithaca, New York.

MNIOTYPE nom. nov.

Genotype: *Hadena ducta* Grote=*Mniotype ducta* (Grote).

This name is proposed to replace ‡*Crino* Hampson, Cat. Lep. Phal. B. M., vi, 321, 1906, nec ||*Crino* Hübner Samml. exot. Schmett., ii, plate (197), 1821 [nec *Crino* Lamarck *in* Virey, Journ. de Phys., iv, 429, 1798]. Hampson erred in that he credited the type of *Crino, sommeri,* to Lefebure. *Sommeri* Lef., a noctuid, was described in 1836, fifteen years after Hübner described his genus *Crino,* which included one species *sommeri* Hübner, a notodontid! Nevertheless Hübner's generic name *Crino* is preoccupied by *Crino* Lamarck, so *Tarsolepis* Butler will be, as it has been, used for *sommeri* Hbn. and its allies.

Mniotype will include all the species listed under *Crino* in McDunnough's Checklist, page 84, 1938, and the Eurasian species, *adusta* Esp., *satura* Schiff. and related forms.

SERICAGLAEA gen. nov.

Genotype: *Orthosia signata* French=*Sericaglaea signata* (French).

Proboscis well developed; palpi short, porrect, clothed with scales and long hair, the third segment drooping, inconspicuous, hidden in the hair of the second; eyes moderate and rounded; antennal scape without lashes, antennae of male simple, minutely ciliate; thorax clothed with hair, no anterior or posterior crests; forelegs with the first tarsal segment bearing 6 to 7 moderately long slender spines, distinctly longer than those on succeeding segments of the same leg, the femora and tibiae of all legs fringed with long hair; abdomen very much flattened, fringed with very evident lateral and anal tufts, no dorsal tufts, clothed on the dorsum with scales and hair; fore wing with the costa evenly curved, the apex blunt and rounded.

Male genitalia symmetrical; uncus simple, long and curved; tegumen broad with two expanded basal lobes; vinculum

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Male genitalia symmetrical; uncus simple, long and curved; tegumen broad with two expanded basal lobes; vinculum

moderate, long; harpes with a distinct pollex and long curved clasper; corona slight; aedoeagus moderate, vesica with a long spine, which possesses a bulbous base, and with a large group of micro-chaetae.

This genus differs from *Epiglaea, Harpaglaea* and *Psectraglaea* by the absence of the conspicuous, sharp frontal tuft and from the latter two genera also by the lighter spination of the first fore tarsal segment. It differs from *Metaxaglaea,* in which I placed the sole species when describing that genus, first, by the palpi, which have the third segment drooping and hidden in the hair of the second, while *Metaxaglaea* has the third segment of the palpi visible and porrect; second, by the cut of the fore wings, those of *Metaxaglaea* having the apex distinctly more acute; third, in that the species of *Sericaglaea* hibernates as an adult, while the two species of *Metaxaglaea* oviposit in the fall, shortly after emerging. Since the author feels that a genus should, besides being structurally a unit, be fundamentally also a biological unit, he believes that this last difference is as valid as a difference of structure. The genitalia approach those of *Psectraglaea,* differing mainly in that the aforementioned genus entirely lacks a corona; from *Metaxaglaea,* they differ in the well developed clasper, the slight corona and the shorter and stockier harpes (valves).

Included species: *Sericaglaea signata* French.

PYREFERRA HESPERIDAGO (Guenée).

Hoporina hesperidago Guenée, Spec. Gen. Lep., vii (Noct. iii), 393, 1852.

Xanthia indirecta Walker, Cat. Lep. Het. B. M., x, 468, 1856 (New synonymy!)

Scopelosoma graefiana Grote, Bull. Buff. Soc. Nat. Sc., ii, 69, 1874.

Scopelosoma moffatiana Grote, Bull. U. S. Geol. & Geog. Surv., vi, 583, 1882.

Guenée described *Hoporina hesperidago* from an unpublished Abbot drawing, which is without a doubt the species that has been called *Pyreferra indirecta* Wlk. by McDunnough in his 1938 Checklist and *Conistra indirecta* by other workers following Hampson. Guenée's description is repeated here to

make it available to those persons to whom the above work is inacessible, and it amply bears out my contention as to the identity of the species in question.

"38 mm. Ailes supér. coupées carrément, comme chez *croceago,* d'un fauve-orangé, nuancé de jaune-safrané et de rouge, avec quatre lignes d'un rouge-brique, presque parallèles et presque également écartées: l'extrabasilaire et la subterminal un peu ondées; le coudee et l'ombre médiane presque droites: la première ne formant un coude que près de la côte; la seconde linéaire et séparant les deux taches ordinaires: l'orbiculaire annulaire et rouge; la réniforme indiquée seulement par le point noir du base. Ailes infér. d'un blanc-jaunâtre, avec deux lignes fine, parallèles et non ondées et un liseré terminal rougeâtres."

The types of *indirecta* and *graefiana* are in the British Museum, and Mr. W. H. T. Tams assures me that they are one species; as such they are referrable to *hesperidago.* The type of *moffatiana* is in the United States National Museum and is likewise referrable here.

The last mention of *hesperidago* in American entomological literature appears to have been by Grote in his 1875 Checklist of the Noctuidae of America, North of Mexico, page 14, footnote 16; following this the name has been ignored by all workers in the Noctuidae.

Pyreferra citrombra n. sp.

Head russet ochre intermingled with dark hairs; thorax ochre brown, collar darker, patagia with a dark russet brown line across the tip. Abdomen pale creamy yellow, the lateral and anal tufts concolorous.

Forewings ochreous, very heavily irrorate with varying degrees of russet fuscous, with an evident silken sheen; the basal half-line straight, dark russet fuscous with a pale shade on the outer side; antemedial line absolutely straight, orange russet in color with a pale shade on the inner side; the median shade straight, of the same color as the antemedial line, with a pale shade on the inner side, not as noticeable as that of the antemedial line; the postmedial line angled sharply outward from below costa, then oblique and straight to inner margin, of the same color as the antemedial line and the median shade, with a distinct pale shade on the inner side; the four aforementioned lines almost parallel; subterminal line vague, irregular, with a

pale shade on the inner side; terminal line lunulate, dark blackish brown; the fringe concolorous with the general tone of the wing; orbicular rather inconspicuous, small and round; reniform constricted at middle on outer side, the inner side resting on the median shade; both ordinary spots ringed by orange russet scales; reniform with a few dark scales in base.

Hindwings pale creamy yellow, with a very evident silken sheen; postmedial line pale reddish russet, parallel to the outer margin; terminal line lunulate of the same color as the postmedial line; fringe concolorous with the general tone of the wings. Below, the fore and hind wings creamy white with a silken sheen; a common postmedial line of reddish russet, crossing both wings, following the same course as that on the upper side; terminal line of both wings lunulate, dark reddish russet; hind wings with faint discal spots. Expanse: 28-35 mm.

♂ genitalia somewhat asymetrical; the uncus short and broad; the tegumen broad; the vinculum long and moderate; valves assymetrical, especially at the apex, the left valve stouter than the right, corona absent, represented by a few hairs, claspers moderately long and irregularly bent; aedoeagus moderately long and stout, the vesica armed only with very minute spinules.

Holotype: ♂, Ithaca, NEW YORK, Sept. 22, 1940 (J. G. Franclemont), [in Coll. Franclemont]. *Allotype*: ♀, Ithaca, NEW YORK, Oct. 2, 1940 (J. G. Franclemont), [in Coll. Franclemont]. *Paratypes* all from New York: 23 ♂ ♂, 33 ♀ ♀, Ithaca, Sept.-April (J. G. Franclemont), 4 ♂ ♂ 3 ♀ ♀, McLean Bogs Reserve, Tompkins County, Oct.-Apr. (J. G. Franclemont), [in Coll. Franclemont]; 16 ♂ ♂, 26 ♀ ♀, Horseheads, Oct.-Apr. (L. R. Rupert), [29 in coll. Rupert, 13 in Coll. Franclemont]; 1 ♂, Sardinia, Oct., (L. R. Rupert), [in Coll. Rupert]; 9 ♂ ♂, 3 ♀ ♀, Ithaca, Oct.-Apr. (Various Collectors), [in Cornell Univ. Coll.].

This species differs from *ceromatica* and *pettiti* by the dark ordinary lines contrasting with the ground color and by the lack of evident dark points on the veins on the outside of the postmedial line, and further from *ceromatica* by its very light color, that of *ceromatica* being deep vinous red, it is also considerably yellower than *pettiti*, which is rather bright orange. From *hesperidago* Gn. (*indirecta* Wlk.), the closest species

superficially, it differs, first, in its paler color, *hesperidago* being bright fiery orange; second, the ordinary lines (except the basal) are straighter and preceded on their inner sides by pale shades; third, the hindwings are also much paler, lacking the orange tint of *hesperidago*.

The male genitalia differ from *hesperidago* and *ceromatica* in that they lack a pollex on the left valve, and from *pettiti*, which they most nearly resemble, in that they have a narrower uncus, broader claspers, broader apices to the valves and a generally larger size.

This is the species that has erroneously been identified as *graefiana* Grt. and is figured as such by Barnes and McDunnough, Contrib. Nat. Hist. Nat. Lep. N. Am., iv (2), pl. xv, fig. 16, 1918, but it cannot conceivably be that species, as the type of *graefiana* is in the British Museum, and is equal to *hesperidago* Gn. (*indirecta* Wlk.). I cannot agree with the two aforementioned authors that this type is spurious. Since no other type has turned up, as they suggested might[1], when they discussed the matter in the Contributions, iv (2), pp. 102-103, 1918, I feel that the type in the British Museum is unquestionably the real one. I am inclined to believe, moreover, that they have misinterpreted the original description; Grote definitely says, "Yellowish, powdered with deep orange," and the species under discussion is never that color, whether it be from the fall or the spring; then too, he says that the hind wings have a distinct orange cast, leaving the costal region free; this species has no such orange cast, the costal region being of the same pale yellow color as the disk of the wing. As one carefully considers the original description of *graefiana* point by point with specimens of both species before him, only one conclusion can be reached, that *graefiana* is a synonym of *hesperidago* (*indirecta*).

[1] In a letter of October 20, 1938, Mr. J. F. Gates Clarke of the United States National Museum has assured me that no type or specimen that might possibly be the type of *graefiana* Grt. was obtained with the Brooklyn Museum collection, which contained the Graef Collection. It was in this latter collection that Barnes and McDunnough thought another type might be found.

Current Entomological Literature

COMPILED BY V. S. L. PATE, L. S. MACKEY and J. W. CADBURY.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. All continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Note. References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of Entomological News for 10c. The number of, or annual volume, and in some cases the part, heft, &c., the latter within ( ) follows; then the pagination follows the colon :

Papers published in the Entomological News are not listed.

GENERAL.—Alexander, C. P.—Frederick Wallace Edwards. [4] 73: 94-95. **Bohart & Stahler.**—Winter insect collecting in Mexico. [55] 17: 96. **Davis, W. T.**—Charles W. Leng and the Brooklyn Entomological Society. [19] 36: 45-49, ill. **Essig, E. O.**—Charles William Woodworth. February, 1941. 2 pp., ill. The University of California Entomological Society and The Entomologist's Daily Post Card. [55] 17: 73-74. **Felt & Bromley.**—Major shade tree insects of 1940. [12] 34: 180-181. **Frost, S. W.**—Transparencies for certain insect and plant materials. [12] 34: 319, ill. **Mengel, Levi W.**—In Memoriam. Reading Public Museum and Art Gallery. 1941. 23 pp., ill. **de la Torre-Bueno, J. R.**—Edward Payson van Duzee. An appreciation. [19] 36: 80-81. Casting up accounts. Directed to authors. [19] 36: 93. **Usinger, R. L.**—Obituary. [55] 17: 84. **Wade & Hyslop.**—Obituary notice of Samuel Henshaw. [10] 43: 108-110. **Zerny, H.**—Hans Rebel. [64] 25: 113-115, ill.

ANATOMY, PHYSIOLOGY, ETC.—Beall, G.—The study of the effect of temperature upon pupation. [Canadian Jour. Res.] 19: 177-184. **Headlee, T. J.**—Further studies of the relative effects on insect metabolism of temperatures derived from constant and variable sources. [12] 34: 171-174.

ARACHNIDA AND MYRIOPODA.—Archer, A. F.—The Argiopidae or orb-weaving spiders of Alabama. [Ala. Mus. Nat. Hist.] Mus. Pap. 14: 77 pp., ill. **Chamberlin, R. V.**—On five new polydesmid millipeds from Mexico. [95] 54: 63-66, ill. **Loomis, H. F.**—Millipeds collected in Puerto Rico and the Dominican Republic by Dr. P. J. Darlington in 1938. [Bull. Mus. Comp. Zool.] 88: 17-80, ill. New genera and species of millipeds from the southern peninsula of Haiti. [Jour. Washington Acad. Sci.] 31: 188-195, ill. **Lundblad, O.**—Weitere neue wassermilben aus Brasilien und Paraguay. [28] 62: 122-126. **Stiles & Stevens.**—Studies of eastern Iowa spiders. [Proc. Iowa Acad. Sci.] 47: 333-342. **Verhoeff, K. W.**—Zur vergleichenden morphologie der Colobognathen. [Arch. Naturg. N. F.] 9: 501-511, ill.

THE SMALLER ORDERS OF INSECTS.—Claassen, P. W.—A catalogue of the Plecoptera of the World. [Cornell Univ. Agr. Exp. Sta.] Mem. 232: 235 pp. **Crawford, J. C.**—The genus Zonothrips in North America. [10] 43: 105-107, ill. **Eichler, W.**—Wirtsspezifität und stammesgeschichtliche gleichläufigkeit bei parasiten im allgemeinen und bei Mallophagen im besonderen [34] 132: 254-262. **Hanson, J. F.**—Studies on the Plecoptera of North America. [19] 36: 57-66, ill. (*k). **Hubbard, C. A.**—Ectoparasites of western Lagomorpha. [Pacific Univ. Bull.] 37: 8 pp., ill. A review of the western fleas of the genus Malaraeus with one new species and the description of a new Thrassis from Nevada. [Pacific Univ. Bull.] 37: 4 pp., ill. **Wilson, F. H.**—The slender lice of American pigeons and doves with descriptions of two new species. [Jour. Parasit.] 27: 259-264, ill.

ORTHOPTERA.—Günther, K.—Ueber die verbreitung einiger insekten um gebiete des Amazonenstromes und die frage eines columbischen faunendistriktes in der brasilianischen subregion. [Arch. Naturg. N. F.] 9: 450-500, ill.

HEMIPTERA.—Barber, H. G.—A new species of Tibraca, injurious to rice in Ecuador (Pentatomid.). [10] 43: 110-111, ill. **Drews, E. A.**—Aphididae of Nevada with a new genus and species. [55] 17: 59-61, ill. **Knight, H. H.**—New species of Irbisia (Mirid.). [19] 36: 75-79. **McConnell, H. S.**—New species of Pseudococcidae. [10] 43:

93-105, ill. **Mazzotti, L.**—Experimental infection of Haematosiphon inodora with Trypanosoma cruzi. [19] 36: 67-68. **Millspaugh, D. D.**—Preliminary survey and ecological notes of Iowa Corixidae. [Proc. Iowa Acad. Sci.] 47: 331-332, ill. **Oman, P. W.**—Revision of the nearctic Megopthal minae (Cicadellid.). [91] 31: 203-210, ill. (k*). **Padley, C.**—A list of the leaf hoppers (Cicadellid.) in the Iowa Insect Survey Collection [Proc. Iowa Acad. Sci.] 47: 393-395. **Pelaez, D.**—Un caso de segmentacion anormal asimetrica en el abdomen de una larva de Triatoma. [121] I: 406-408, ill. **de la Torre-Bueno, J. R.**—Help notes toward a revision of the genus Harmostes. [19] 36: 82-92. (k). **Usinger, R. L.**—Notes and descriptions of neotropical Triatominae (Reduviid.). [55] 17: 49-57, ill. (k). **Wood, S. F.**—Notes on the distribution and habits of reduviid vectors of Chagas' disease in the southwestern United States. (Reduviid.). [55] 17: 85-94, cont.

LEPIDOPTERA.—Dampf, A.—Nota sobre la biologia del Noctuido Antaplaga. [121] I: 454-455, ill. **Fletcher, T. B.**—A noctuid larva living in animal tissues. [8] 77: 107. **Franclemont, J. G.**—Gluphisia lintneri and related species (Notodontid.). [4] 73: 92-94, ill. **Maria, H. A.**—Catalogo explicativo de las ropaloceras Colombianas del Museo del Instituto de la Salle. [Rev. Acad. Colombiana Cien., Fis. y Nat.] 4: 61-63. **Mortimer, M. F.**—The life history and control of the pine tip moth, Rhyacionia frustrana (Tortricidae) at Nashville, Tennessee. [Jour. Tenn. Acad. Sci.] 16: 190-206, ill. **Newcomb, W. W.**—Note on the occurrence of Oeneis macouni. [19] 36: 56. **Richards, A. G.**—The genus Arugisa in the United States, with the description of a new species (Phalaenid.). [40] No. 1114: 4 pp., ill. A new species of Metalectra from Florida (Phalaenid.). [40] No. 1115: 2 pp., ill. The noctuid moths of the Galapagos Islands from the collections of the Allan Hancock Foundation. [Allan Hancock Pac. Exp.] 5: 233-251, ill. The genus Bulia in Mexico and Central America. (Phalaenid.). [Allan Hancock Pac. Exp.] 5: 255-267, ill. The male genitalia of Epipomonia multipunctata (Epipyrop.). [Allan Hancock Pac. Exp.] 5: 271-275, ill. **Zerny, H.**—Ueber Caligopsis seleucida (Brassol.) [64] 25: 150-152, ill.

DIPTERA.—Aczel, M.—Vorarbeiten zu einer monographie der Dorylaiden. [34] 132: 149-169, ill. (k*).

Aitken, T. H. G.—A new American subgenus and species of Aëdes. (Culicid.). [55] 17: 81-84. **Alexander, C. P.**—New nearctic crane-flies (Tipulidae). [4] 73: 85-90. **Bohart, G. E.**—The oviposition of conopid flies upon smaller andrenid bees. [55] 17: 95-96. **Brookman, B.**—A new Californian Stenopogon (Asilid.). [55] 17: 78-80. **Buddington, A. R.**—The nutrition of mosquito larvae. [12] 34: 275-280. **Curran, C. H.**—New neotropical Tachinidae. [40] No. 1113: 5 pp. (k). **Halvorson & Jaques.**—A preliminary list of the crane flies (Tipulidae) of Iowa. [Proc. Iowa Acad. Sci.] 47: 329-330. **Hase, A.** — Parasitologische betrachtungen uber pupiparen insbesondere uber crataerina. [Zeit. Parasitenkde] 11: 637-651, ill. **MacCreary, D.**—Comparative density of mosquitoes at ground level and at an elevation of approximately one hundred feet. [12] 34: 174-179, ill. **Ouellet, J.**—Additions au catalogue des dipteres du Quebec. [Le Nat. Canadien] 68: 121-141. **Reeves, W. C.**—The genus Orthopodomyia in California. [55] 17: 69-72. **Vargas, L.**—New variety of Anopheles pseudo-punctipennis (Culicid.). [19] 36: 73-74. **Wilcox, J.**—New Heteropogon with a key to the species (Asilid.). [19] 36: 50-56.

COLEOPTERA.—Balthasar, V. — Neue Canthidium-arten. [Ent. Nachricht.] 13: 111-140. (s) **Barber, H. S.**—Species of fireflies in Jamaica (Lampyridae). [Proc. Rochester Acad. Sci.] 8: 48 pp., ill. (k*). **Barr, W. F.**—Distributional notes and new records of Acmaeodera (Buprestid.). [55] 17: 62-69. **Fiedler, C.**—Neue südamerikanische arten der gattung Rhyssomatus (Cryptorhynch.). [Ent. Nachricht.] 13: 81-92. **Leech, H. B.**—The species of Matus, a genus of carnivorous water-beetles (Dytiscid.). [4] 73: 77-83, ill. The male of Hydroporus coelamboides. [4] 73: 96. Collecting of the rare water beetle Laccornis difformis by the late Ch. Roberts. [4] 73: 96. **Malkin, B.**—A new locality for Cantharis cartwrighti. [19] 36: 96. **McDunnough, J.**—A new coleophorid of the metalic-winged group. [4] 73: 91, ill. **Precht, H.**—Ein beitrag zur biologie der triungulinuslarven von Meloë. [34] 132: 245-254, ill. **Saylor, L. W.**—A new Mexican scarab beetle. [95] 54: 67-68. **Stone, M. W.**—Life history of the sugar-beet wireworm in Southern California. [U. S. Dept. Agric.] Tech. Bull. 744: 87 pp., ill. **Uhmann, E.**—Amerikanische Hispinen aus dem Berliner Museum. [28] 61: 14-18, ill. Die genotypen der von mir aufgestellten Hispinen-gattungen. [28] 61: 143-

144. **Wright & Whitehouse.**—Additions to the list of Cincinnati Coleoptera. [19] 36: 69-73.

HYMENOPTERA.—Bequaert, J. — Pseudodynerus, a neotropical complex of Eumenine wasps (Vespid.). [40] No. 1106: 10 pp., ill. (*k). **Bohart, R. M.**—Yellowjackets versus campers. [55] 17: 58. **Duran-Moya, L.**—Die Thynniden Chiles. [Arch. Naturg. N. F.] 10: 71-176, ill. **Gahan, A. B.**—A revision of the parasitic wasps of the genus Necremnus (Eulophid.). [91] 31: 196-203. (k*). **Gaul, A. T.**—An unrecorded sleeping habit of Dolichovespula arenaria (Vespid.). [19] 36: 49. **Hitchings, J. M.**—A comparison in size of pollen baskets of three races of honeybees. [Proc. Iowa Acad. Sci.] 47: 405-408, ill. **Martorell, L. F.**—Biological notes on the sea-grape sawfly, Schizocera krugii in Puerto Rico. [Caribbean Forester] 2: 141-143, ill. **Walley, G. S.**—A new species of Mirax parasitic on Coptodisca arbutiella (Braconid.). [4] 73: 83-84.

INSECTS AND THEIR STORIES. By HARRY HOOGSTRAAL with camera studies by MELVIN MARTINSON and drawings by Dr. CARL O. MOHR. Thomas Y. Crowell Company, New York, 1941, 7¾ inches high x 9¾ inches wide. 144 pages, including 46 full-page half-tone reproductions of photographs of entire insects and 38 drawings of whole insects or of parts. $2.00—A non-technical account of the form, habits and life-history of 46 different insects under their common names, grouped in five sections: Introduction, Insects of the house, garden, trees and woods, in or near the water. The most striking feature of the book is the photographic reproductions, but while some of these, such as the stink bug, buckeye, cabbage and tiger swallow tail butterflies, lacewing, dobson fly and water strider are, as the jacket says, "clear," others, such as most (but not all) of the beetles, the honeybee, hornet and thread-waisted wasp, are cloudy or indistinct, owing to the lack of contrast with the background or to faulty focussing. Prof C. L. Metcalf, of the Department of Entomology, University of Illinois (where Mr. Hoogstraal is a graduate student) writes the foreword. At the end is an "Index and guide to recognition of insects . . . arranged according to orders" and an alphabetical index.—P. P. CALVERT.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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Wanted—Living specimens of the luminous beetle **Phengodes** this summer. E. Newton Harvey, The Biology Dept., Princeton University, Princeton, New Jersey.

Malacodermata (except Lycidae and Cleridae) of the world. Will determine and purchase. Also exchange against Col. or all other insects from Bolivia. Walter Wittmer, Correio 1043, Buenos Aires, Rep. Argentina.

I want to collect Rothschildia, agapema, gulfina and io moths and Texas butterflies for interested persons. Eula Frizzell, R 4 San Benito, Texas.

Wanted—To hear from collectors who desire extra good cocoons of Michigan **Platysamia columbia,** that will emerge June, 1941. W. S. McAlpine, 575 Townsend St., Birmngham, Michigan.

Wanted—Specimens of the genus Trox from North America. Will exchange or determine for duplicate material. Mark Robinson, 231 Cherry St., Sharon Hill, Pennsylvania.

Lepidoptera—From the South, including P. palamedes, T. halesus and E. jucunda to exchange for fauna from other localities. H. W. Eustis, Woodbine Rd., Lakemont, Augusta, Georgia.

Wanted—Egg cases of preying mantids. Correspondence desired with those who will collect. Osmond P. Breland, Department of Zoology, The University of Texas, Austin, Texas.

Wanted—To buy, specimens of bees of the genus **Nomada,** any quantity, especially North American. Quote price, locality. Hugo G. Rodeck, University of Colorado Museum, Boulder Colorado.

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